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EXAMINER	
THANGAVELU, KANDASAMY	
ART UNIT	**PAPER NUMBER**
2123	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/707,656	ARAGONES, JAMES KENNETH	
	Examiner	Art Unit	
	Kandasamy Thangavelu	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 November 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6, 8-17, 19-28 and 30-41* is/are rejected.

7)☒ Claim(s) *7, 18 and 29* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is in response to the Applicant's Response mailed on November 8, 2007. Claims 1, 12 and 23, 34 and 35 were amended. Claims 36-41 were added. Claims 1-41 of the application are pending. This office action is made final.

Claim Objections

2. The following is a quotation of 37 C.F.R § 1.75 (d)(1):

> The claim or claims must conform to the invention as set forth in the remainder of the specification and terms and phrases in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description.

3. Claim 4, 8, 15, 19, 26 and 30 are objected to because of the following informalities:

In Claim 4, Line 4, "a baseline model" appears to be incorrect and it appears that it should be "the baseline model".

In Claim 8, Line 2, "engine services database" appears to be incorrect and it appears that it should be "engine service database".

In Claim 15, Lines 3-4, "a baseline model" appears to be incorrect and it appears that it should be "the baseline model".

In Claim 19, Line 2, "engine services database" appears to be incorrect and it appears that it should be "engine service database".

In Claim 26, Line 4, "a baseline model" appears to be incorrect and it appears that it should be "the baseline model".

In Claim 30, Line 3, "engine services database" appears to be incorrect and it appears that it should be "engine service database".

Appropriate corrections are required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 7, 8, 10, 12, 40 and 41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5.1 In claim 7, line 1, there is no antecedent basis for "the preprocessor".

5.2 In claim 8, line 1, there is no antecedent basis for "the preprocessor".

5.3 In claim 10, lines 2-3, there is no antecedent basis for "the preprocessed data".

5.4 In claim 12, lines 9-10, there is no antecedent basis for "the engine operating conditions".

5.5 In claim 40, line 1, there is no antecedent basis for "The system of claim 12", since claim 12 deals with a computer implemented method.

5.6 In claim 41, line 1, there is no antecedent basis for "The method of claim 23" since claim 23 deals with a computer-readable storage medium.

6. Claims 1, 12, 23, 34, 35 and 39-41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. This is because these claims use vague and indefinite terms resulting in vague and indefinite claims.

6.1 In claim 1, Lines 9-10, "based on similarities in engine operating parameters" is vague and indefinite. In Line 16, "one aspect of engine baseline model" is vague and indefinite.

6.2 In claim 12, Lines 5-6, "based upon similarities in engine operating parameters" is vague and indefinite.

6.3 In claim 23, Lines 5-6, "based upon similar engine operating parameters" is vague and indefinite.

6.4 In claim 34, Lines 5-6, "based on similarities in engine operating conditions" is vague and indefinite. In Line 12, "one aspect of engine baseline model" is vague and indefinite.

6.5 In claim 35, Line 8, "clusters of similar engine operating parameters" is vague and indefinite. In Line 15, "one aspect of engine baseline model" is vague and indefinite.

6.6 In claim 39, Lines 1-2, "cluster of similar engine operating parameters" is vague and indefinite. In claim 40, Line 2, "clusters of similar engine operating parameters" is vague and indefinite. In claim 41, Line 2, "clusters of similar engine operating parameters" is vague and indefinite.

Claim Interpretations

7. 1 The specification, describes at Page 2, Para 0003, data that are similar for specified engine variable and grouping similar data; at Page 3, Para 0004, finding data that are similar and grouping data; at Page 12, Para 0025 groups or clusters that represent similar operating conditions including performance variable such as power setting, altitude, air speed, air temperature. Therefore the Examiner has interpreted, "similarities in engine operating parameters" to mean "similarities in data values of engine operating parameters". The Examiner has interpreted, "similar engine operating parameters" to mean "similar data values of engine operating parameters". The Examiner has interpreted, "similarities in engine operating conditions" to mean "similarities in data values of engine operating parameters". The Examiner has interpreted, "clusters of similar engine operating parameters" to mean "clusters of similar data values of engine operating parameters".

7.2 Specification Page 8, Para 0020 states that service database contains engine performance information. Page 9, Para 0020 states that engine service database contains other engine performance information. Page 9, Para 0020 also states that engine service database comprises aircraft operating and setting data. Page 8-9, Para 0020 states that engine performance information includes environmental data such as altitude, air temperature, air speed, engine loading, engine temperature and pressure. Specification Page 10, Para 0022 states that engine service database also contains repair history, dates of service, types of service and engine utilization data. Since only the engine and aircraft operating and performance data and environmental information has been modeled in the specification and the service related data have not been shown to be used in modeling, the Examiner assumes that engine service database is primarily operating and performance data and it is only this data that is required to practice the invention. The service data related to repair is not required to practice the invention.

7.3 The specification defines at Page 1, Para 0003, that baseline modeling models an ideal product or process over time. It states at Page 2, Para 0003 that engine baseline modeling uses data from thermodynamic cycle analysis. It states at Page 4, Para 0006, Page 134, Para 0026 and Page 19, Para 0042 that building engine baseline modeling is done using preprocessed data which is preprocessed from the data collected during normal operation of the engine. It states at Page 15, Para 0032, Page 19, Para 0042 and Page 22, Para 0045 that baseline model is built from regression analysis and it determines a multiple regression equation. Therefore the Examiner has interpreted the baseline model as the regression model.

7.4 Claims 12 and 23 claim in part, "using the engine baseline model to monitor engine status, predict future engine behavior, diagnose engine faults, identify when engine performance is out of specification, identify engine quality, or design a new engine system, or a combination thereof". However, the specification describes at Page 23, Para 0048, Page 25, Para 0050, Para 0051 and Para 0052, only diagnosing the faults from the baseline model. It is not obvious to the Examiner how the baseline model is used to monitor engine status, identify engine quality (what is quality?) and design new engine system. Therefore the Examiner has interpreted "using the engine baseline model to monitor engine status, predict future engine behavior, diagnose engine faults, identify when engine performance is out of specification, identify engine quality, or design a new engine system, or a combination thereof" to mean diagnosing the faults from the baseline model.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

9. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 1-6, 8-17, 19-28 and 30-41 are rejected under 35 U.S.C. § 102(b) as being anticipated by **Bernier et al.** (U.S. Patent 4,215,412) in view of **Goebel et al.** (U.S. Patent 6,216,066).

10.1 **Bernier et al.** teaches Real time performance monitoring of gas turbine engines. Specifically, as per claim 1, **Bernier et al.** teaches a system for building an engine baseline model for fuel-powered engines (Abstract, L1-5; Fig. 1, Items 54 and 64; CL1, L49-55; CL1, L68 to CL2, L4; CL5, L41-49; CL5, L61 to CL6, L3; CL12, L47-55), comprising:

a computer comprising one or more processors and a memory configured to store a program of instructions (Abstract, L1-2; Fig. 6);

an engine service database containing engine data for fuel-powered engines (CL1, L56-60; CL1, L65-67; CL5, L5-10);

a data segmenting component that segments the engine data into a plurality of groups based on each specific engine (Abstract, L18-24; CL6, L17-23; CL35, L47-54)

an engine baseline modeling component that builds an engine baseline model for each of the plurality of groups using regression analysis (CL6, L17-25; CL12, L19-32; C12, L47-55), wherein the regression analysis relates engine performance variables as functions of engine

operating parameters (Abstract, L1-5; CL2, L46-53; CL5, L19-28; CL5, L61 to CL6, L3; CL12, L19-32);

a display configured to display at least one aspect of engine baseline model (Fig. 6; Fig. 1, Item 68; CL14, L4-11: the display can be used for the display of models both during real time control and during off-line modeling and analysis).

Bernier et al. does not expressly teach a data segmenting component that segments the engine data into a plurality of groups, and each group clusters a portion of the engine data based on similarities in engine operating parameters, and based on time periods of data acquisition. **Goebel et al.** teaches a data segmenting component that segments the engine data into a plurality of groups, and each group clusters a portion of the engine data based on similarities in engine operating parameters (Abstract, L3-8; CL2, L13-21; Figs. 4-7 and 12), and based on time periods of data acquisition (CL1, L17-19; CL3, L52-54). It would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to modify the system of **Bernier et al.** with the system of **Goebel et al.** that included a data segmenting component that segments the engine data into a plurality of groups, and each group clusters a portion of the engine data based on similarities in engine operating parameters, and based on time periods of data acquisition, because that would allow generating alerts through simultaneous assessment of several engine variables and by learning changing engine behavior (CL2, L6-8).

Per claim 2: **Bernier et al.** teaches that the data segmenting component segments the engine data into the plurality of groups throughout a pre-selected moving time window (CL15, L59 to CL16, L24; CL16, L6-19).

Per claim 3: **Bernier et al.** teaches that the data segmenting component segments the engine data into the plurality of groups throughout discrete time ranges (Abstract, L5-18; Abstract, L24-29; CL1, L67 to CL2, L4).

Per claim 4: **Bernier et al.** teaches that the engine baseline modeling component generates a set of estimated regression parameters for each of the plurality of groups based upon the regression analysis, wherein each set of estimated regression parameters are representative of a baseline model for that group (CL5, L41-49; CL5, L61 to CL6, L3; CL12, L47-55; CL15, L59 to CL16, L24).

Per claim 5: **Bernier et al.** teaches that the engine baseline modeling component calculates a time series for each estimated regression parameter, and wherein the engine baseline modeling component further calculates a trend for each estimated regression parameter over time (Abstract, L5-18; Abstract, L24-29; CL1, L67 to CL2, L4; CL15, L59 to CL16, L24).

Per claim 6: **Bernier et al.** teaches means for identifying fluctuations in trends for each estimated regression parameter representative of engine; means for evaluating trends having identified fluctuations; and means for identifying parameter estimating trends relating to baseline trend shifts (CL15, L59 to CL16, L24).

Per claim 8: **Bernier et al.** teaches that the preprocessor comprises a data acquisition component that extracts engine data from the engine services database (CL1, L49-67; CL5, L19-28).

Per claim 9: **Bernier et al.** teaches that that the engine baseline modeling component comprises a metric component that validates the engine baseline model (Abstract, L5-12; CL15, L59 to CL16, L24).

Per claim 10: **Bernier et al.** teaches that the engine baseline modeling component comprises a heuristics component that generates rules for cleaning the preprocessed data (Abstract, L18-24; CL1, L60-65).

Per claim 11: **Bernier et al.** teaches a model diagnostics component that evaluates performance of the engine baseline model (Abstract, L5-12).

10.2 As per claim 12, **Bernier et al.** teaches a computer implemented method for building an engine baseline model for fuel-powered engines (Abstract, L1-5; Fig. 1, Items 54 and 64; CL1, L49-55; CL1, L68 to CL2, L4; CL5, L41-49; CL5, L61 to CL6, L3; CL12, L47-55), comprising:

storing engine data in an engine service database for fuel-powered engines (CL1, L56-60; CL1, L65-67; CL5, L5-10);

processing the engine data into a predetermined format in a preprocessor (Abstract, L18-24; CL1, L60-65), wherein the preprocessor includes a data segmenting component that segments the engine data into a plurality of groups based upon based on each specific engine (Abstract, L18-24; CL6, L17-23; CL35, L47-54);

building an engine baseline model for each of the plurality of groups using regression analysis (CL6, L17-25; CL12, L19-32; C12, L47-55), wherein the regression analysis relates engine performance variables as functions of engine operating conditions (Abstract, L1-5; CL2, L46-53; CL5, L19-28; CL5, L61 to CL6, L3; CL12, L19-32);

using the engine baseline model to monitor engine status, predict future engine behavior, diagnose engine faults, identify when engine performance is out of specification, identify engine quality, or design a new engine system, or a combination thereof (Abstract, L1-12 and L16-18; Fig. 1, Item 62).

Bernier et al. does not expressly teach that the processing includes segmenting the engine data into a plurality of groups based upon similarities in engine operating parameters, and further based upon specific time periods during which each data element was measured. **Goebel et al.** teaches that the processing includes segmenting the engine data into a plurality of groups based upon similarities in engine operating parameters (Abstract, L3-8; CL2, L13-21; Figs. 4-7 and 12), and further based upon specific time periods during which each data element was measured (CL1, L17-19; CL3, L52-54).

10.3 As per Claim 23, it is rejected based on the same reasoning as Claim 12, supra. Claim 23 is a computer readable medium claim reciting the same limitations as Claim 12, as taught throughout by **Bernier et al.** and **Goebel et al.**

10.4 As per claim 39, **Bernier et al.** and **Goebel et al.** teach the system of claim 1. **Bernier et al.** teaches engine operating parameters comprising altitude, air speed, air temperature, fuel specific heat value, air humidity, control settings, or a combination thereof (CL6, L32-37).

Bernier et al. does not expressly teach that the each group represents a cluster of similar engine operating parameters comprising altitude, air speed, air temperature, fuel specific heat value, air humidity, control settings, or a combination thereof. **Goebel et al.** teaches that the each group represents a cluster of similar engine operating parameters comprising altitude, air speed, air temperature, fuel specific heat value, air humidity, control settings, or a combination thereof (Abstract, L3-8; CL2, L13-21; Figs. 4-7 and 12).

10.5 As per Claims 13-17, 19-22, 24-28, 30-33 and 40-41 these are rejected based on the same reasoning as Claims 2-6, 8-11 and 39 supra. Claims 13-17, 19-22, 24-28, 30-33 and 40-41 are computer implemented method and computer readable storage medium claims reciting the same limitations as Claims 2-6, 8-11 and 39, as taught throughout by **Bernier et al.** and **Goebel et al.**

10.6 As per claim 34, **Bernier et al.** teaches a computer implemented method for building an engine baseline model for combustion-based engines (Abstract, L1-5; Fig. 1, Items 54 and 64;

CL1, L49-55; CL1, L68 to CL2, L4; CL5, L41-49; CL5, L61 to CL6, L3; CL12, L47-55), comprising:

storing engine data in an engine service database for combustion-based engines (CL1, L56-60; CL1, L65-67; CL5, L5-10);

clustering the engine data into a plurality of groups each based on each specific engine (Abstract, L18-24; CL6, L17-23; CL35, L47-54);

building an engine baseline model for each of the plurality of groups using regression analysis (CL6, L17-25; CL12, L19-32; C12, L47-55), wherein the regression analysis relates engine performance variables as functions of engine operating conditions (Abstract, L1-5; CL2, L46-53; CL5, L19-28; CL5, L61 to CL6, L3; CL12, L19-32);

outputting at least one aspect of the engine baseline model for display on a monitor (Fig. 6; Fig. 1, Item 68; CL14, L4-11: the display can be used for the display of models both during real time control and during off-line modeling and analysis).

Bernier et al. does not expressly teach clustering the engine data into a plurality of groups each based on similarities in engine operating conditions, and based on time periods of data acquisition. **Goebel et al.** teaches clustering the engine data into a plurality of groups each based on similarities in engine operating conditions (Abstract, L3-8; CL2, L13-21; Figs. 4-7 and 12), and based on time periods of data acquisition (CL1, L17-19; CL3, L52-54).

10.7 As per claim 35, **Bernier et al.** teaches a computer-readable storage medium incorporating computer instructions, which when executed on a computer perform a process for

building an engine baseline model for combustion-based engines (Abstract, L1-5; Fig. 1, Items 54 and 64; CL1, L49-55; CL1, L68 to CL2, L4; CL5, L41-49; CL5, L61 to CL6, L3; CL12, L47-55), comprising:

instructions for storing engine data in an engine service database for combustion- based engines (CL1, L56-60; CL1, L65-67; CL5, L5-10);

engine operating parameters comprising altitude, air speed, air temperature, fuel specific heat value, air humidity, control settings or a combination thereof (CL6, L32-37);

instructions for building an engine baseline model for each of the plurality of groups using regression analysis (CL6, L17-25; CL12, L19-32; C12, L47-55), wherein the regression analysis relates engine performance variables as functions of engine operating conditions (Abstract, L1-5; CL2, L46-53; CL5, L19-28; CL5, L61 to CL6, L3; CL12, L19-32);

instructions for outputting at least one aspect of the engine baseline model for display on a monitor (Fig. 6; Fig. 1, Item 68; CL14, L4-11: the display can be used for the display of models both during real time control and during off-line modeling and analysis).

Bernier et al. does not expressly teach segmenting the engine data into a plurality of groups representative of different clusters of similar engine operating parameters comprising altitude, air speed, air temperature, fuel specific heat value, air humidity, control settings or a combination thereof. **Goebel et al.** teaches segmenting the engine data into a plurality of groups representative of different clusters of similar engine operating parameters comprising altitude, air speed, air temperature, fuel specific heat value, air humidity, control settings or a combination thereof (Abstract, L3-8; CL2, L13-21; Figs. 4-7 and 12).

Per claims 36 and 38: **Bernier et al.** teaches the engine service database comprises historical service information; and the engine service database comprises engine repair history (CL2, L5-6).

Per claim 37: **Bernier et al.** teaches the engine service database comprises historical service information; and the engine service database comprises engine repair history (CL2, L5-6).

Allowable Subject Matter

11. Claims 7, 18 and 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

12. Applicant's arguments filed on November 8, 2007 with respect to claim rejections under 35 USC 102 (b) rejections have been considered. The arguments are not persuasive. New claim rejections under 35 USC 103 (a) are included in this Office Action in response to the Applicant's amendments..

12.1 As per the applicant's argument that "Bernier does not teach or suggest an engine service database containing engine data for fuel-powered engines; the Examiner takes the position that Specification Page 8, Para 0020 states that service database contains engine performance information; Page 9, Para 0020 states that engine service database contains other engine performance information; Page 9, Para 0020 also states that engine service database comprises aircraft operating and setting data; Page 8-9, Para 0020 states that engine performance information includes environmental data such as altitude, air temperature, air speed, engine loading, engine temperature and pressure; Specification Page 10, Para 0022 states that engine service database also contains repair history, dates of service, types of service and engine utilization data. Since only the engine and aircraft operating and performance data and environmental information has been modeled in the specification and the service related data have not been shown to be used in modeling, the Examiner assumes that engine service database is primarily operating and performance data and it is only this data that is required to practice the invention. The service data related to repair is not required to practice the invention. Therefore, the Examiner takes the position that Bernier teaches the service database. **Bernier et al.** teaches an engine service database containing engine data for fuel-powered engines (CL1, L56-60; CL1, L65-67; CL5, L5-10)

12.2 As per the applicant's argument that "nowhere does Bernier disclose or teach any data segmenting component that segments the engine data into a plurality of groups, and each group clusters a portion of the engine data; the Bernier reference is completely silent about any

"segmenting" or "cluster", the Examiner has used a new reference **Goebel et al.** (U.S. Patent 6,216,066).

Bernier et al. does not expressly teach a data segmenting component that segments the engine data into a plurality of groups, and each group clusters a portion of the engine data based on similarities in engine operating parameters, and based on time periods of data acquisition. **Goebel et al.** teaches a data segmenting component that segments the engine data into a plurality of groups, and each group clusters a portion of the engine data based on similarities in engine operating parameters (Abstract, L3-8; CL2, L13-21; Figs. 4-7 and 12), and based on time periods of data acquisition (CL1, L17-19; CL3, L52-54).

12.3 As per the applicant's argument that "Bernier does not teach or suggest an engine baseline model; the application discloses that the engine baseline model is built from a regression analysis; in this disclosure, the equation to be determined can be expressed as: Y = f(altitude, temperature, power setting, air speed) where altitude, temperature, power setting and air speed are the X variables. The engine baseline modeling component performs a regression to determine the above equation for each of the selected engine performance variables (i.e., power setting, altitude, air speed, and air temperature) during specified times that the engine is operating; the Bernier reference is completely silent about any "baseline model"; there apparently is no engine baseline model for each of the plurality of groups using regression analysis", the Examiner takes the position that the applicant's baseline models deal with only

regression models for engine performance prediction. Therefore, the Examiner maintains that Bernier's regression models are same as the baseline models of the applicant.

12.4 As per the applicant's argument that "independent claim 12 recites, "using the engine baseline model to monitor engine status, predict future engine behavior, diagnose engine faults, identify when engine performance is out of specification, identify engine quality, or design a new engine system, or a combination thereof"; independent claim 23 recites, "instructions for using the engine baseline model to monitor engine status, predict future engine behavior, diagnose engine faults, identify when engine performance is out of specification, identify engine quality, or design a new engine system, or a combination thereof"; Bernier does not teach or suggest the foregoing features of independent claims 12 and 23", the Examiner takes the position that the specification describes at Page 23, Para 0048, Page 25, Para 0050, Para 0051 and Para 0052, only diagnosing the faults from the baseline model; it is not obvious to the Examiner how the baseline model is used to monitor engine status, identify engine quality (what is quality?) and design new engine system. Therefore the Examiner has interpreted "using the engine baseline model to monitor engine status, predict future engine behavior, diagnose engine faults, identify when engine performance is out of specification, identify engine quality, or design a new engine system, or a combination thereof" to mean diagnosing the faults from the baseline model.

12.5 As per the applicant's argument that "Bernier fails to teach or suggest the feature of mapping engine data to an uncorrelated data set using a principal component analysis technique; the Examiner relied on the Rizzoni reference for disclosure of the same features; Rizzoni fails to

obviate the deficiencies in the teachings of Bernier", the Examiner has withdrawn claim rejections using Rizzoni reference.

Conclusion

ACTION IS FINAL – NECESSIATED BY AMENDMENT

13. Applicant's amendments necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is

571-272-3717. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez, can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC 2100 Group receptionist: 571-272-2100.

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